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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/941,370	08/28/2001	Hao Fang	DA01036/1363D	7060

7590 01/23/2003
SAWYER LAW GROUP LLP
P.O. Box 51418
Palo Alto, CA 94303

EXAMINER

BOOTH, RICHARD A

ART UNIT	PAPER NUMBER
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2812

DATE MAILED: 01/23/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/941,370

Applicant(s)

FANG ET AL.

Examiner

Richard A. Booth

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 December 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4 and 10-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4 and 10-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cappelletti et al., U.S. Patent 5,637,520 in view of Nakata, U.S. Patent 5,254,489.

Cappelletti et al. shows the invention substantially as claimed including a method comprising the steps of: providing a portion 35' of a dual gate oxide in a periphery area of the memory cell; simultaneously providing a dual gate oxide 61 in a core area of the memory device and completing the dual gate oxide 35" in the periphery area (see Figures 10-12 and column 4-lines 20-65).

Cappelletti et al. fails to expressly disclose providing a nitridation process in both the core area and periphery area of the memory device.

Nakata discloses forming an oxide film and subsequently performing a nitridation process and forming different films of different thickness for forming different MOS elements (see column 3, lines 51-58). In view of this disclosure, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the process of Cappelletti et al. so as to include an additional nitridation process after forming the oxides because the nitridation allows for a gate film of longer endurance.

Claims 2 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cappelletti et al., U.S. Patent 5,637,520 in view of Nakata, U.S. Patent 5,254,489 as applied to claim 1 above, and further in view of Lee, U.S. Patent 5,175,120.

Cappelletti et al. and Nakata are applied as above but fail to expressly disclose depositing a layer of polysilicon in a core and peripheral area; depositing a layer of ONO layer over the polysilicon; and removing the layer of ONO and poly from the peripheral area.

Lee discloses a conventional process for simultaneous memory and peripheral formation including forming a polysilicon layer 24 and a ONO layer 26 and removing both of these layers from the peripheral region 10 (see Figures 2A-2B and column 3-lines 4-55) and a subsequent process to form a second polysilicon layer in the memory and peripheral areas. In view of this disclosure, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the process so as to include memory and peripheral gate formation process of Lee in the reference of Cappelletti et al. modified by Nakata because this is shown to be conventional fabrication for memory and peripheral circuits.

~~Claims 3-4 and 11-12 are rejected under 35 U.S.C. 103(a) as being unpatentable~~
over Cappelletti et al., U.S. Patent 5,637,520 in view of Nakata, U.S. Patent 5,254,489
as applied to claim 1 above, and further in view of Lee, U.S. Patent 5,175,120 as
applied to claims 2 and 10 above, and further in view of Chien et al., U.S. Patent
6,436,759.

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Cappelletti et al., Nakata, and Lee are applied as above but fail to expressly disclose removing approximately half of the first polysilicon layer from the periphery area.

Chien et al. discloses removing half of a first polysilicon layer from a gate 78 formed in the peripheral area 64 (see Figure 14 and column 4, lines 30-56). In view of this disclosure, it would have been obvious to one of ordinary skill in the art to modify the process of Cappelletti et al. modified by Nakata and Lee so as to remove half of the first polysilicon layer in the peripheral area because this reduces the chances of short-circuiting and boron dopant penetration (see column 3, lines 20-31).

Response to Arguments

Applicant's arguments filed 12-16-02 have been fully considered but they are not persuasive. Applicant argues that Nakata fails to show the completion of one gate oxide simultaneously with another. However, Nakata shows in Figures 3C and 3D, simultaneously nitrifying oxide regions 6 and 7 of different thicknesses. Furthermore, Nakata states at column 3, lines 51-58 that these nitrified films can be formed at different element regions to form different types of MOS transistors with different thicknesses. ~~Clearly, this provides ample motivation to combine the references of~~
Cappelletti et al. with Nakata as stated in the rejection under 35 USC 103 above.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

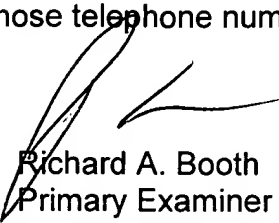
A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Richard A. Booth whose telephone number is 308-3446. The examiner can normally be reached on Monday-Thursday from 7:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Niebling can be reached on 308-3325. The fax phone numbers for the organization where this application or proceeding is assigned are 308-7724 for regular communications and ~~308-7724 for After Final communications.~~

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 308-1782.



Richard A. Booth
Primary Examiner
Art Unit 2812
